

Notice of Allowability

Application No.

10/608,892

Examiner

Sandra M. Nolan-Rayford

Applicant(s)

SIEGEL ET AL.

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment dated 14 March 2005.
2. ☒ The allowed claim(s) is/are 7-22.
3. ☒ The drawings filed on 27 June 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413)B, Paper No./Mail Date 2005/06/10.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

S. M. Nolan-Rayford
SANDRA NOLAN RAYFORD
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mary Louise Gioeni (518/452.5600) on 08 June 2005 and with Phil Hanson on 27 June 2005.

The application has been amended as follows:

In the Specification

At page 1, par. 0001, line 2, immediately after "2002", the phrase -- , now abandoned, -- has been inserted.

In the Claims

In claim 7, line 6, after "functionality", the phrase "capable of" has been deleted and -- for -- has been inserted in its place.

In claim 8, line 3, after "dispersing", "the" has been deleted.

In claim 8, line 3, after "nanoparticles", the following has been inserted:

-- having surface functionality for self-bonding and bonding with the liquid phase during freeze-drying -- .

In claim 21, line 3, after "consisting essentially of", "the" has been deleted.

In claim 21, line 3, after "nanoparticles", the following has been inserted:

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-- having surface functionality for self-bonding and bonding with the liquid phase during freeze-drying -- .

Claims 1-6 and 23 have been cancelled.

Remarks

The application has been amended to:

- update the status of the provisional application,
- cancel the non-elected claims, and
- make it clear that the nanoparticles used in the process claimed are nanoparticles having surface functionality for self-bonding and bonding with the liquid phase during freeze-drying.

* * *

REASONS FOR ALLOWANCE

3. The following is an examiner's statement of reasons for allowing claims 7-23:

4. The application contains three base claims. They can be summarized, with key features in italics, as follows:

Claim 7 covers a process for making microtubes from nanoparticles, which process comprises the steps:

-forming a dispersion of the nanoparticles in liquid phase; and

-freeze-drying the dispersion to make microtubes that comprise an assembly of nanoparticles,

wherein the nanoparticles have surface functionality such that they (i) self-bond and (ii) bond with the liquid phase during freeze-drying.

Claim 8 covers a process for *making microtubes from nanoparticles having surface functionality*, which process comprises the steps: [cont'd]

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-dispersing the nanoparticles in a hydrogen-bonding liquid; and freeze-drying the dispersion to make microtubes that comprise an assembly of nanoparticles having functionality such that they (i) self-bond and (ii) bond with the liquid phase during freeze-drying,
wherein the concentration of nanoparticles in the hydrogen-bonding liquid ranges from 0.0025 to 0.0625 g/ml.

Claim 21 covers a process for *making microtubes having surface hydroxyl functionality*, which process comprises the steps:

-forming a dispersion consisting essentially of the nanoparticles having functionality such that they (i) self-bond and (ii) bond with the liquid phase during freeze-drying in a hydrogen-bonding liquid; and

-freeze-drying the dispersion to produce microtubes comprising an assembly of the nanoparticles used in the forming step,
wherein the concentration of nanoparticles in the liquid dispersion ranges from 0.0025 to 0.0625 g/ml.

5. The prior art of record fails to teach or suggest processes for making microtubes having all of the features of claims 7, 8, or 21.

6. The Rundgren article, cited by applicants, teaches granules, or clusters, of powders having sizes of 50 to 4000 micron. The powders from which the granules are made are not taught to have functional surfaces.

7. The Kim abstract (KR 2002040644A) teaches reacting lyophilized ferrite particles of 20 to 80 nanometer size with hydrogen and another gas to produce multiwalled (i.e., multilayered) nanotubes. It does not teach the production of tubes from nanoparticles having functional surfaces.

8. That is, there is no applicable prior art of record that teaches: [cont'd]

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a. With respect to claim 7: a process for making microtubes by forming a liquid dispersion of nanoparticles, freeze-drying it to form a microtube assembled from surface-functional nanoparticles.

b. With respect to claim 8: a process for making microtubes by dispersing 0.0025 to 0.0625 g/ml nanoparticles that have surface functionality in a hydrogen-bonding liquid, freeze-drying the dispersion to yield the microtubes as assembly of nanoparticles.

c. With respect to claim 21: a process for making microtubes that have surface hydroxyl functionality, the process involving forming a dispersion consisting essentially of 0.0025 to 0.0625 g/ml of the nanoparticles in a hydrogen-bonding liquid and freeze-drying the dispersion to make microtubes comprising an assembly of nanoparticles.

9. The arguments recited in the 14 March 2004 response to the 13 December 2004 office action are deemed persuasive.

The examiner agrees with applicants that the references are not discussing the production of "microtubes" from applicants' types of nanoparticles via applicants' steps.

Citation as of Interest

10. Allen et al (US 6,334,856) is cited for teaching the production of microtubes by another process.

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Applicants' Comments

11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication should be addressed to Sandra M. Nolan-Rayford, at telephone number 571/272-1495. She can be reached Monday through Thursday, from 6:30 am to 4:00 pm, ET.

If attempts to reach the examiner are unsuccessful, contact her supervisor, Harold Pyon, at 571/272-1498.

The fax number for patent application documents is 703/872-9306.

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S. M. Nolan-Rayford
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6-28-05

10608982(20050610)

**SANDRA NOLAN RAYFORD
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